## What is claimed is:

- 1. A method for measuring aldehyde present in a polymer, comprising the steps of:
- (a) extracting gaseous aldehyde from a polymer into a confined space;
- (b) reacting said gaseous aldehyde with an aldehyde-reactive reagent on a reagent carrier in said confined space;
- (c) contacting said aldehyde-reactive reagent with a reagent solution to obtain a detectable response; and
- (d) measuring a response to obtain an aldehyde reading.
- 2. The method of claim 1, wherein said extracting step further includes a step of raising the emperature of said polymer.
- 3. The method of claim 1, further including the step of agitating said reagent solution for reducing the duration of said contacting step.
- 4. The method of claim 1, further including the step of heating said reagent solution for reducing the duration of said contacting step.
- 5. The method of claim 1, wherein said measuring step is a visual comparison of said response with a chart.
- 6. The method of claim 1, wherein said measuring step includes a photometric instrument for measuring said response.
- 7. The method of claim 1, wherein said measuring step is conducted using a transmission mode.
- 8. The method of claim 1, wherein said measuring step is conducted using a reflectance mode.



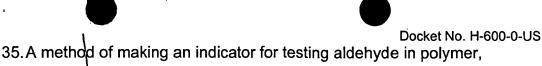
- 9. The method of claim 1, wherein said reagent solution is present in excess quantity for dissolving said reacted aldehyde-reactive reagent for forming a homogeneous solution.
- 10. The method of claim 1, wherein said confined space is an airtight container, said polymer disposed in said container.
- 11. The method of claim 1, wherein said confined space is formed by the combination of a preform and closure.
- 12. The method of claim\1, wherein said confined space is formed by the combination of a bottle and closure.
- 13. The method of claim 1, wherein said polymer is a preform.
- 14. The method of claim 1, wherein said polymer is a bottle.
- 15. The method of claim 1, 14, 15 wherein said polymer is in pieces.
- 16. The method of claim 1, wherein said aldehyde-reactive reagent comprises a compound selected from the group consisting of 3-methyl-2-benzothiazolinone hydrazone hydrochloride,
  - 4-amino-3-hydrazino-5-mercapto-√,2,4-triazole,
  - 2-hydrazinobenzothiazole, 2,4-dinit ophenylhydrazone,
  - 5-dimethylaminonaphthalene-1-sulfohydrazide,
  - 2-diphenylacetyl-1,3-indandione-1-hydrazone,
  - 2-hydrazinobenzothiazole-4 -nitrobenzenediazonium fluoborate, p-nitrobenzalhydrazone, 1,3-cyclohexanedione, 3,5-diaminobenzoic acid, 5,5-dimethylcyclohexane-1,3-dione, 2-hydroxycarbazole, dimedone and indole.

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- 17. A method for measuring acetaldehyde present in a polyester polymer, comprising the steps of:
- (a) extracting gaseous acetaldehyde from a polymer into a confined space;
- (b) reacting said gaseous acetaldehyde with an aldehyde-reactive reagent disposed on an indicator in said confined space;
- (c) contacting the aldehyde-reactive reagent with an oxidizer solution to obtain a color change in said oxidizer solution; and
- (d) measuring the color response to obtain an acetaldehyde reading.
- 18. The method of claim 17, wherein said extracting step further includes a step of raising the temperature of said polymer.
- 19. The method of claim 17, further including the step of agitating said reagent solution for reducing the duration of said contracting step.
- 20. The method of claim 17, further including the step of heating said reagent solution for reducing the duration of said contracting step.
- 21. The method of claim 17, wherein said measuring step is a visual comparison of said response to a chart.
- 22. The method of claim 17, wherein said measuring step is conducted with a spectrophotometer.
- 23. The method of claim 17, wherein said confined space is an airtight container, said polymer disposed within said container
- 24. The method of claim 17, wherein said confined space is formed by the combination of a preform and closure.

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- 25. The method of claim 17, wherein said confined space is formed by the combination of a bottle and closure.
- 26. The method of claim 17, wherein said polymer is a preform.
- 27. The method of claim 17, wherein said polymer is a bottle.
- 28. The method of claim 17, 26, or 27, wherein said polymer is in pieces.
- 29. The method of claim 17, wherein said aldehyde-reactive reagent is 3-methyl-2-benzothiazolinone hydrazone hydrochloride.
- 30. The method of claim 77, wherein said indicator comprises an aldehydereactive reagent coated on a solid particulate carrier applied to a support strip.
- 31. The method of claim 17, wherein said oxidizer solution is an aqueous solution of ferric chloride.
- 32. The method of claim 17, wherein said oxidizer solution is an aqueous solution of potassium ferricyanide.
- 33. The method of claim 17, wherein said oxidizer solution is an aqueous solution of lead tetraacetate.
- 34. The method of claim 17, wherein said oxidizer solution is an aqueous solution of periodic acid.



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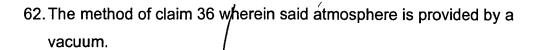
- comprising the steps of:

  (a) contacting a solution of aldehyde-reactive reagent with a carrier; and
- (b) drying the reagent in an atmosphere non-reactive with said reagent to form an aldehyde-reactive reagent coated carrier.
- 36. The method of claim 35 further including the step of applying said coated carrier to a support.
- 37. The method of claim 36 wherein the solvent for forming said solution is water.
- 38. The method of claim 36 wherein the solvent for forming said solution is an organic solvent.
- 39. The method of claim 36 wherein the pH of said solution is optimized to promote solubilization of said aldehyde-reactive reagent.
- 40. The method of claim 36 wherein said carrier is a plurality of particles.
- 41. The method of claim 36 wherein said carrier is a plurality of beads.
- 42. The method of claim 36 wherein said carrier is a film.
- 43. The method of claim 36 wherein said carrier is a membrane.
- 44. The method of clai/m 36 wherein said carrier is a fiber.
- 45. The method of claim 36 wherein said carrier is a sheet.
- 46. The method of claim 36 wherein said carrier is a foam.

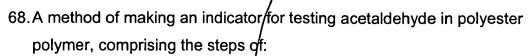




- 47. The method of claim 36 wherein said carrier is alumina.
- 48. The method of claim 36 wherein said carrier is a silaca gel.
- 49. The method of claim 36 wherein said carrier is glass.
- 50. The method of claim 36 wherein/said carrier is kaolin.
- 51. The method of claim 36 wherein said carrier is diatomaceous earth.
- 52. The method of claim 36 wherein said carrier is ceramic.
- 53. The carrier of claim 36 wherein said carrier is a synthetic polymer.
- 54. The method of claim 36 wherein said drying step is conducted with heat.
- 55. The method of claim 54 wherein said heat is supplied by a vacuum oven.
- 56. The method of claim \$4 wherein said heat is supplied by a water bath.
- 57. The method of claim 54 wherein said heat is supplied by a heater tape.
- 58. The method of claim 54 wherein said heat is supplied by a heater mantle.
- 59. The method of claim 54 wherein said heat is supplied by a heater block.
- 60. The method of claim 54 wherein said heat is supplied by an infrared lamp.
- 61. The method of claim 54 wherein said heat is supplied by a microwave.



- 63. The method of claim 36 wherein said atmosphere is provided by a continuous flow of a dry non-reactive gas.
- 64. The method of claim 36 wherein said carrier and said support are inert to said aldehyde-reactive reagent.
- 65. The method of claim 36 wherein said carrier is adhesively bonded to said support.
- 66. The method of claim 36 wherein said carrier is physically immobilized to said support.
- 67. The method of claim 36 wherein said carrier is a support.



- (a) contacting a solution of aldehyde-reactive reagent with a particulate carrier;
- (b) drying the reagent coated particulate carrier in an atmosphere nonreactive with said reagent to form aldehyde-reactive reagent coated carrier;
- (c) applying a thin layer of the coated particulate carrier to an adhesive tape inert to said reagent;
- (d) bonding said tape to a support.
- 69. The method of claim 68 wherein said tape is single sided.
- 70. The method of claim 6\$ wherein said tape is double sided.
- 71. The method of claim 68, 69, or 70 wherein said tape covers a portion of said support.
- 72. The method of claim 68 wherein said solution is prepared by dissolving 3-methyl-2-benzothiazoline hydrazone hydrochloride hydrate in water.
- 73. The method of claim 72 wherein the concentration of said 3-methyl-2-benzothiazoline hydrazone hydrochloride solution is between 0.5 to 3% by weight.
- 74. The method of claim 68 wherein said particulate carrier comprises alumina.
- 75. The method claim 74 wherein said alumina is less than 180  $\mu m$  in size.





76. The method of claim 68 wherein said indicator includes a detection limit of at least 0.5μg of acetaldehyde.

77. The method of claim 68 wherein said drying step is conducted in heat and a vacuum

- 78. A, kit for measuring aldehyde in a polymer, comprising:
- (a) at least one seal for forming an airtight confined space,
- (b) an\aldehyde-reactive reagent coated carrier on a support, and
- (c) a reagent solution.
- 79. A kit as in claim 78 wherein said seal is a closure suitable for forming an airtight confined space within a molded part to contain aldehyde extracted from said polymer.
- 80.A kit as in claim 78 wherein said seal is a container suitable for forming an airtight confined space around a molded part to contain aldehyde extracted from said polymer.
- 81. The kit as in claim 78 wherein said kit further includes a closure equipped with a septa for sealing a molded part, and an air-tight syringe to sample head space gas from said confined space.
- 82. The kit as in claim 78 wherein said kit further includes a chart for determining the amount of reacted aldehyde.
- 83. The kit as in claim 78 wherein said kit further includes a spectrophotometer for determining the amount of reacted aldehyde.
- 84. The kit as in claim 78 wherein said kit further includes a correlation table for correlating the aldehyde detected with the aldehyde content of said polymer.
- 85. The kit as in claim 78 wherein said carrier is a plurality of particles.
- 86. The kit as in claim 78 wherein said carrier is a plurality of beads.

- 87. The kit as in claim 78 wherein said carrier is a film.
- 88. The kit as in claim 78 wherein said carrier is a membrane.
- 89. The kit as in claim 78 wherein said carrier is a fiber.
- 90. The kit as in claim 78 wherein said carrier is a sheet.
- 91. The kit as in claim 78 wherein said carrier is foam.
- 92. The kit as in claim 78 wherein said carrier and said support are disposed in a sealed package.
- 93. The kit as in claim 92 wherein said package is moisture and light resistant.
- 94. The kit as in claim 78 further including a fiber coated with an aldehydereactive reagent housed within a needle of a syringe.
- 95. The kit as in claim 78 wherein said aldehyde-sensitive reagent is 3-methyl-2-benzothiazolinone hydrazone hydrochloride.
- 96. The kit as in claim 78 wherein said reagent solution reacts with said aldehyde-reactive reagent providing a detectable response.
- 97. The kit as in claim 78 wherein said reagent solution is an aqueous solution of ferric chloride.
- 98. The kit as in claim 78 wherein said reagent solution is an aqueous solution of potassium ferricyanide.

- 99. The kit as in claim 78 wherein said reagent solution is an aqueous solution of lead tetraacetate.
- 100. The kit as in claim 78 wherein said reagent solution is an aqueous solution of periodic acid.
- 101. The kit as in claim 78 wherein said reagent solution is an acidified ferric chloride solution.
- 102. The kit as in claim 101 wherein said the concentration of said ferric chloride solution is between 0.5 to 3% by weight.
- 103. The kit as in claim 78, wherein said aldehyde-reactive reagent is selected from the group consisting of 3-methyl-2-benzothiazolinone hydrazone hydrochloride, 4-amino-3-hydrazino-5-mercapto-1,2,4-triazole, 2-hydrazinobenzothiazole, 2,4-dinitrophenylhydrazone, 5-dimethylaminonaphthalene-1-sulfohydrazide, 2-diphenylacetyl-1,3-indandione-1-hydrazone, 2-hydrazinobenzothiazole-4 nitrobenzenediazonium fluoborate, p-nitrobenzalhydrazone, 1,3-cyclohexanedione, 3,5-diaminobenzoic acid, 5,5-dimethylcyclohexane-1,3-dione, 2-hydroxycarbazole, dimedone and indole.